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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/611,749	06/30/2003	Ronald Scott Bunker	121278-2	1351

7590 09/08/2004

General Electric Company  
CRD Patent Docket Rm 4A59  
Bldg. K-1  
P.O. Box 8  
Schenectady, NY 12301

EXAMINER

WHITE, DWAYNE J

ART UNIT

PAPER NUMBER

3745

DATE MAILED: 09/08/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/611,749

Applicant(s)

BUNKER ET AL.

Examiner

Dwayne J White

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 30 June 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-44 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 20-24 is/are allowed.
- 6) ☒ Claim(s) 1,2,9-11,13-17,19,25,26,28-41,43 and 44 is/are rejected.
- 7) ☒ Claim(s) 3-8,12,18,27 and 42 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 30 June 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 20030630/20031007.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## **DETAILED ACTION**

### ***Drawings***

The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the secondary cooling slot must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as “amended.” If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. The replacement sheet(s) should be labeled “Replacement Sheet” in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 37 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Specifically, claim 37 recites the limitation “a secondary cooling slot”. It is unclear how there is a secondary cooling slot when a primary cooling slot has not been claimed. Further, Figure 15 only shows one cooling slot 114 (page 10, paragraph 3) though this cooling slot is characterized as being a secondary cooling slot. Clarification is required.

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 2, 11, 13-17 and 19 are rejected under 35 U.S.C. 102(b) as being anticipated by Bunker et al. (6,234,755). Bunker et al. disclose a turbine assembly hot gas path component comprising: a wall 90 having a cold surface 94 and a hot surface 92; at least one film cooling hole 98 extending through the wall and defining an exit site in the hot surface of the wall; and at least one flow modifier formed on the hot surface of the wall adapted to direct the coolant flowing out of the exit site toward the hot surface of the wall and extends outward from the hot surface and conforms to the hot surface but does not extend over the exit site. The flow modifier is positioned downstream of the exit site and the cooling hole comprises a round hole. In another embodiment each cooling hole has a flow modifier 1112 associated it (see Figure 5).

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In this embodiment a plurality of connectors 114 are formed on the hot surface of the wall and extending outwards from and conforming to the hot surface of the wall. Bunker et al. also disclose the flow modifiers being used with a single row or multiple rows of cooling holes wherein the flow modifiers would be situated between the rows.

Claims 37-41, 43 and 44 are rejected under 35 U.S.C. 102(b) as being anticipated by Meginnis (3,864,199) as far as they are definite. Meginnis discloses a turbine assembly comprising: a first component 14, a second component 11, the first and second components defining a cooling slot, and at least one flow modifier 19/22 formed on a surface of one of the first and second components and extends in to the cooling slot. The flow modifier is either round 19 or polygonal 22 and forms a ridge 24 extending along the respective one of the first and second components. The at least one flow modifier is liners and have a curved component (See Figure 2).

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 25, 26, 28-36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bunker et al. in view of Bradbury et al. (Journal of Fluid Mechanics, 1975 (vol. 70, part4, pg801-813)). Bunker et al. disclose all of the claimed subject matter except for the flow modifier being

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formed on the passage wall of the cooling hole, the distance the flow modifier extends from the hot surface of the wall or the flow modifier being rounded.

Bradbury et al. teach as passage for fluid flow wherein a tab is disposed within the passage for the purpose of modifying the flow. Since both Bunker et al. and Bradbury et al. are directed towards flow modification of fluid through a passage, it would have been obvious at the time the invention was made to a person having ordinary skill in the art to modify the cooling hole passage of Bunker et al., with the teachings of Bradbury et al., by forming the flow modifier on the passage wall of the cooling hole for the purpose of improving the cooling effectiveness of the cooling hole.

Further, since applicant has not disclosed that having the flow modifier at this specific shape or dimensions solves any stated problem or is for any particular purpose above the fact that the flow modifier improves film cooling effectiveness and it appears that the flow modifier of Bunker et al. would perform equally well with having the shape and dimensions as claimed by applicant, it would have been an obvious matter of design choice to modify the flow modifier of Bunker et al. by utilizing the specific shape and dimensions as claimed for the purpose of improving cooling effectiveness.

Claims 8 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bunker et al. Bunker et al. disclose all of the claimed subject matter except for a specific distance for which the flow modifier extends from the hot surface of the wall.

Since applicant has not disclosed that having the flow modifier at this specific dimension solves any stated problem or is for any particular purpose above the fact that the flow modifier improves film cooling effectiveness and it appears that the flow modifier of Bunker et al. would

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perform equally well with having the dimensions as claimed by applicant, it would have been an obvious matter of design choice to modify the flow modifier of Bunker et al. by utilizing the specific dimension as claimed for the purpose of improving cooling effectiveness.

## **CONCLUSION**

### ***Allowable Subject Matter***

Claims 20-24 are allowed.

Claims 3-8, 12, 18, 27, and 42 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

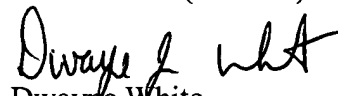
### ***Contact Information***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dwayne J White whose telephone number is (703) 306-3464. The examiner can normally be reached on 7:30 am to 5 pm T-F and alternate Mondays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward Look can be reached on (703) 308-1044. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Dwayne White  
Patent Examiner  
Art Unit 3745

DJW



**EDWARD K. LOOK**  
**SUPERVISORY PATENT EXAMINER**  
**TECHNOLOGY CENTER 3700**

9/7/04